ORIGINAL

0000007763

LAW OFFICES
MARTINEZ & CURTIS, P.C.

MICHAEL A. CURTIS
JAY M. MARTINEZ (1943-2000)
WILLIAM P. SULLIVAN
SUSAN D. GOODWIN
LARRY K. UDALL
ANJA K. WENDEL
PAUL M. MICHAUD
KELLY Y. SCHWAB
PHYLLIS L. NEW

2712
PHOENIX, ARIZONA 85006-1090
TELEPHONE (602) 248-0372
TELECOPIER (602) 266-8290

OF COUNSEL
JOSEPH F. ABATE
THOMAS A. HINE
JEFFREY A. KATZ

RECEIVED

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March 6, 2003

Arizona Corporation Commission
DOCKETED

MAR 06 2003

DOCKETED BY

Mr. Jerry Smith
Utilities Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Re: Docket No. E-00000D-03-0047

Dear Jerry:

In order to assist Staff in the ongoing RMR evaluation working group process, enclosed are Wellton-Mohawk Generating Facility's ("WMGF") comments to Arizona Public Service Company's Yuma Reliability Must-Run Analysis, 2003 – 2005 in the form of a Preliminary Assessment Report. This Preliminary Assessment Report has also been e-mailed to APS for review and comment.

If you have any questions or concerns regarding the above-mentioned, please feel free to contact me.

Very truly yours,

Paul R. Michaud

Paul R. Michaud
For the Firm

PRM/klc

Enclosure: Preliminary Assessment of Project Impacts
on RMR Requirements for the Yuma Area

1752/CEC Hearing/letters/js-prelim assess RMR require.030603

WELLTON-MOHAWK GENERATING FACILITY'S PRELIMINARY ASSESSMENT OF PROJECT IMPACTS ON RMR REQUIREMENTS FOR THE YUMA AREA

March 6, 2003

Prepared by Navigant Consulting, Inc.
201 E. Washington Street
Collier Center, Suite 1750
Phoenix, AZ 85004

A. INTRODUCTION

Pursuant to requirements of the Arizona Corporation Commission (ACC), Arizona Public Service Company (APS) submitted its "Reliability Must-Run Analysis - 2003-2005" report (Report) to the ACC on January 31, 2003 and discussed the results of these studies at an ACC sponsored workshop on February 18, 2003. At that workshop, each Reliability Must Run area or load pocket in Arizona was discussed by the responsible utility and interested parties were invited to ask questions or provide comments. Following APS' discussion of the Yuma load pocket, one of two load pockets in APS' service area, the Wellton-Mohawk Generating Facility (WMGF) through its consultant Navigant Consulting, Inc. (NCI) provided both written and oral initial comments and indicated that it had requested and obtained certain information from APS so that WMGF could perform additional studies relative to this matter. WMGF requested and was granted the right to provide the results of its studies for consideration by the ACC staff and APS in the upcoming Track B solicitation. NCI has completed its studies and the purpose of this report is to present the results for comment.

B. MAJOR CONCLUSIONS AND COMMENTS

The following major conclusions reflect the results of NCI's analysis regarding the Yuma load pocket (the Area):

1. In its RMR studies, APS noted that the addition of a second 500/69-kV transformer at North Gila and sectionalizing the North Gila 69-kV bus could be cost effective methods to use in reducing the need for RMR generation in the Area. However, NCI's analysis shows that with the Blythe Project on-line and power flows over the 500 kV Arizona-California transmission system at levels that are likely to be experienced in the summer, the second 500/69-kV transformer at North Gila does not reduce the need for RMR generation in the Area and could, in fact, increase the need for such generation to maintain reliable service in the event there are outages on the Hassayampa-North Gila 500 kV line.
2. The addition of the WMGF significantly reduces the amounts of RMR generation required from the existing Yuma area resources. These reductions (during peak load periods) range from approximately 90 MW to approximately 120 MW depending on whether or not certain of the APS 69-kV lines are

reconductored as specified in the APS RMR study even if the second North Gila transformer is not installed.

3. In its previous comments on the APS RMR Study NCI had noted differences between the Area's projected peak loads as reported in the Study to those provided by APS in responses to WMGF data requests in the Track B proceeding and in APS's review of the Yuma load pocket undertaken in mid-2002. Even though the differences in projected loads are relatively small and the impact of the differences on RMR requirements can be assessed using the Figures 2 and 3 attached to this report, APS should be asked to provide information in its RMR Study report on why the estimated peak demands have changed.

4. APS' RMR Study notes that the non-APS owned generation in the Yuma area (i.e., the 75 MW Yucca steam unit owned and used by the Imperial Irrigation District (IID) and the 53 MW Yuma Cogeneration project being sold to SDG&E) are resources that could be available to APS to provide it with RMR support (both capacity and energy). The powerflow data sets obtained from APS by NCI assume that, as required, these two resources are used for RMR purposes. As noted in previous comments, the RMR Study, however, does not say whether APS intends to enter into the required contracts to ensure that these resources will be available and running when required to provide RMR support to serve APS' customers. Without the existence of such contracts, these resources cannot be relied upon to provide RMR support and thus must be removed from the list of available alternatives.

5. The APS RMR Study states, "All existing Yuma-area transmission and generation resources are necessary to reliably serve the Yuma-area load". However, on a going forward basis this statement may not be accurate because, as noted in this report, generation (such as the WMGF) could be added on the periphery of the load pocket to replace at least some of the Yuma-area generation resources in a manner that would provide the same or higher levels of reliability. Therefore if APS were to enter into a contract to purchase power from the WMGF, at least some of APS' Yuma-area generation could be shut down without impacting local reliability

C. APS ANALYSIS

In its RMR studies for the Yuma Area, APS assessed RMR requirements for three different load levels for each year of the 2003-2005 period and performed sensitivity studies for 2005 in which a second 500/69-kV transformer was added at North Gila and the 69-kV bus at North Gila was sectionalized. In the powerflow cases used for these studies, APS assumed that:

1. The 520 MW Blythe Energy Power Plant Project (Blythe Project), which is scheduled to be on-line during the summer of 2003, would be operating at 80 MW (a capacity factor of about 15%),
2. Power transfers over the East-of-River (EOR) Path would be in the range of 3,100-3,200 MW (a load factor of about 40% of the Path rating which is slightly over 7,500 MW). For these conditions the Hassayampa-North Gila line was loaded at about 77% of its rated capacity.
3. There would be no loads served from the 34.5-kV facilities between Sonora and San Luis (refer to Figure 1)
4. The following additions/modifications (all of which were in the APS 10-Year Plan) would be made to the Area system:
    a. 2003 – Yucca-Cocopah 69-kV line reconductored and 32 MVAR capacitor bank added at Foothills,
    b. 2004 – Riverside-10th Street 69-kV line reconductored,
    c. 2005 – Yucca-Laguna 69-kV line reconductored, 32 MVAR capacitor bank added at 32nd Street, and 28.8 MVAR capacitor bank added at Laguna,
    d. 2005 (With second North Gila transformer) – Foothills-Foothill Tap and 32nd Street-Ivalon 69-kV lines reconductored.

In its studies, APS assessed the impacts of outages of the North Gila 69-kV bus, the North Gila 500/69-kV transformer, and of the 69-kV lines in the Yuma Area; however, it apparently did not consider the impacts of an outage on the Hassayampa-North Gila 500-kV line. The APS studies indicated that in 2005 the RMR requirements for the Area would be as summarized in Table 1. The most critical outage in the APS studies of the cases without a second North Gila transformer (the "05" cases) was that of the North Gila 69-kV bus. In the studies with the second transformer (the "05_1" cases) a North Gila-Gila 69-kV line outage was the most critical at the two lower load levels while the Yucca-Laguna Tap line outage was the most critical at the peak load level. Because of the decrease in RMR requirement noted in Table 1, APS concluded that a second 500/69-kV transformer at North Gila (and some related modifications to the APS 69-kV system) would significantly mitigate the Yuma Area RMR situation.

TABLE 1 RESULTS OF APS RMR STUDIES (2005)		
Load Level (MW)	RMR Requirement (MW)	
	Without 2nd Transformer	With 2nd Transformer
160	0	0
260	88	0
324	163	50

D. WMGF ANALYSIS

NCI, on behalf of the WMGF, has undertaken studies of the Yuma Area to assess how the amounts of RMR generation required from the existing Yucca generating plant and the Yuma Cogeneration facility would change if:

1. Outages of the Hassayampa-North Gila 500 kV line were simulated;
2. Up to approximately 9 MW of load were served from the Sonora-San Luis 34.5-kV line;
3. The Blythe Project was operating at 510 MW (a capacity factor of about 98%) and EOR transfers were increased to 4,300-4,400 MW (which results in the Hassayampa-North Gila line being loaded at about 95% of its capacity); and
4. Phase 1 (310 MW) of the WMGF was on-line.

In the NCI studies, it was assumed that the additional generation from the Blythe Project and the additional power transferred over the EOR path would be scheduled to Southern California using percentages from the Op erating Studies Subcommittee Handbook (SCE - 50%, LADWP - 35%, and SDG&E - 15%).

In summary, the results of pre-WMGF studies undertaken by APS and/or NCI and the post-WMGF studies performed by NCI indicate that:

1. The RMR benefits of adding a second 500/69-kV transformer at North Gila decrease by about 30 MW when an outage of the Hassayampa-North Gila 500-kV line is considered in the studies. When the Blythe Project generation and the EOR transfers are increased to the levels discussed above, a second North Gila transformer does not reduce the need for RMR generation because the Hassayampa-North Gila 500-kV line outage is the most critical outage.
2. The addition of the WMGF significantly reduces the amounts of (and could replace) RMR generation required from the existing Yuma area resources.

These reductions (during peak load periods) are about 90 MW if no modifications were made to the APS 69-kV lines and could be up to about 120 MW if the Foothill-Foothill Tap and 32nd Street-Ivalon 69-kV lines were reconductored and the North Gila 69-kV bus was sectionalized.

E. DISCUSSION – STUDIES WITHOUT WMGF

Table 2 summarizes (and Figure 2 depicts) the results of the studies done by APS and of those done by NCI on to assess the impacts of simulating the Hassayampa-North Gila outage and with the Blythe Project generation and EOR transfers increased to levels that are likely to be experienced during summer peak load conditions.

TABLE 2
RESULTS OF RMR STUDIES WITHOUT WMGF
(MW)

Existing Yuma Area Generation On-Line	Blythe Project @ 80 MW and EOR @ 3,100-3,200 MW						Blythe Project @ 510 MW and EOR @ 4,300-4,400 MW [5/]			
	Without 2nd No. Gila Transformer [1/]		With 2nd No. Gila Transformer [2/]				Without 2nd No. Gila Transformer		With 2nd No. Gila Transformer	
			"Local" Outages [3/]		With 500-kV Outage [4/]					
	Load Served [6/]	System Import Limit	Load Served	System Import Limit	Load Served	System Import Limit	Load Served	System Import Limit	Load Served	System Import Limit
0	164	164	275	275	230	230	168	168	156	156
88	258	170	365	277	340	252	258	170	201	113
163	333	170	390	227	390	227	298	135	242	79

[1/] System modifications include reconductoring of Yucca-Cocopah, Riverside-10th Street, and Yucca-Laguna 69-kV lines and addition of shunt capacitor banks at Foothills, 32nd Street, and Laguna

[2/] System modifications also include sectionalizing No. Gila 69-kV bus and reconductoring Foothills-Foothills Tap and 32nd Street-Ivalon 69-kV lines

[2/] No. Gila transformer, No. Gila 69-kV bus, and APS 69-kV lines in Yuma area

[4/] Hassayampa-North Gila 500-kV line outage

[5/] Studies assessed local outages and Hassayampa-North Gila 500-kV line outage

[6/] 2005 load projected to be 324 MW

The information in Table 2 and Figure 2 shows that:

1. The amounts of RMR generation required from the existing generation without a second transformer at North Gila increases from 0 MW at minimum load to slightly over 160 MW during peak load periods. The System Import Limit

(SIL) increases from 164 MW at minimum load to 170 MW at the other two load levels studied.

2. Adding the second North Gila 500/69-kV transformer would increase the SIL to 275 MW at minimum load and to 390 MW at peak load if the Hassayampa-North Gila line outage is not considered. The increased SILs decrease the existing generation RMR requirement at the 2005 peak load level to about 50 MW (refer to Figure 2).

3. If the impacts of the Hassayampa-North Gila line outage are considered, the SIL would decrease to 230 MW at minimum load and to 252 MW when loads are at about 77% of peak. With these decreased SILs the existing generation RMR requirement at the 2005 peak load is about 80 MW (refer to Figure 2).

4. If the Blythe Project generation is increased to 510 MW and EOR power transfers are increased to about 4,300 MW the SILs at minimum load (and resultant RMR requirement from existing generation) are about the same as in the APS cases. However, above this load level the impacts of the Hassayampa-North Gila outage become much more critical and result in overloads on the Gila 161/69-kV transformers. Because the Gila transformers feed 69-kV lines into the APS Area and serve Western load, the NCI studies assumed that both would be reduced on a pro-rata basis as required to mitigate overloads on the Gila transformers. Without the second transformer at North Gila, the resultant SILs range from 170 MW (at 77% of peak load) to 135 MW (at peak load). Because of the decreases in SIL, about 200 MW of RMR generation would be required from the existing Yuma area resources to reliably serve peak loads without the second North Gila transformer.

5. The addition of a second transformer at North Gila reduces the impedance between the North Gila 500 and 69-kV busses which, in turn, causes the flows through and overloads of the Gila transformers after the 500-kV line outage to be higher than those seen without the second transformer. Therefore, with the second transformer, the amount of load that can be served at a given generation level decreases such that the SILs are 113 MW (at 77% of peak load) and 79 MW (at peak load). The result is that about 250 MW of RMR generation is required from the existing Yuma area resources at peak loads.

F. DISCUSSION – STUDIES WITH WMGF

Table 3 summarizes (and Figure 3 depicts) the results of studies done by NCI with the WMGF on-line and operating at 310 MW.

TABLE 3
RESULTS OF RMR STUDIES WITH WMGF
(MW) [1/]

Existing Yuma Area Generation On-Line	Blythe Project @ 80 MW and EOR @ 3,100-3,200 MW				Blythe Project @ 510 MW and EOR @ 4,300-4,400 MW			
	Without APS System Modifications		With APS System Modifications [2/]		Without APS System Modifications		With APS System Modifications [2/]	
	Load Served [3/]	System Import Limit	Load Served	System Import Limit	Load Served	System Import Limit	Load Served	System Import Limit
0	211	211	224	224	191	191	212	212
88	308	220	323	235	300	212	322	234
163	359 [4/]	196	406	243	355 [4/]	192	398	235

[1/] Studies assessed local outages and Hassayampa-North Gila 500-kV line outage

[2/] System modifications include sectionalizing No. Gila 69-kV bus and reconductoring Foothills- Foothills Tap and 32nd Street-Ivalon 69-kV lines

[3/] 2005 load projected to be 324 MW

[4/] Would be 30-40 MW higher if the Foothills- Foothills Tap and 32nd Street-Ivalon 69-kV lines were reconductored

The information in Table 3 and Figure 3 shows that:

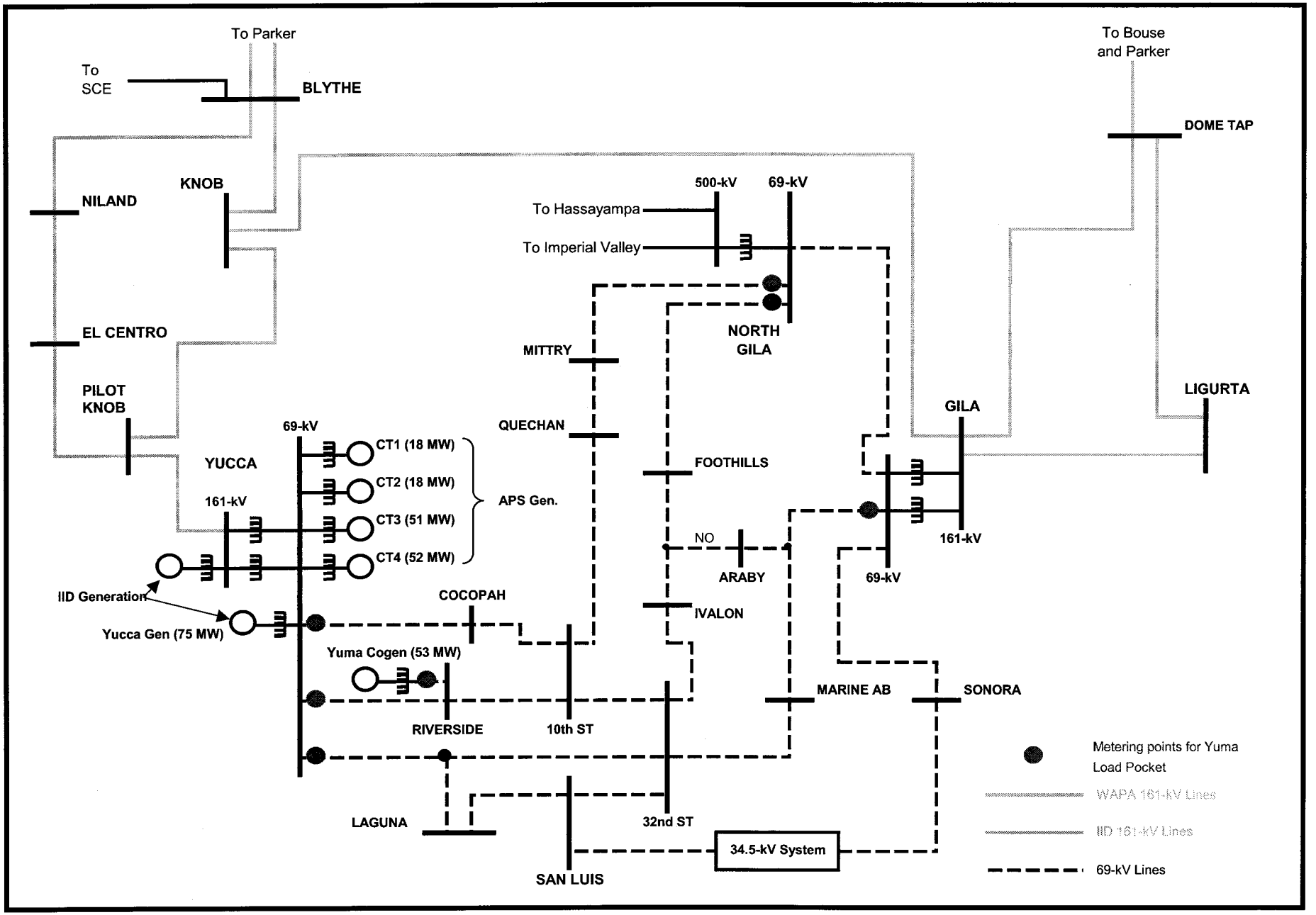
1. The SILs at minimum load range from 191 MW to 224 MW while those at peak load range from 192 MW to 243 MW (these ranges are the result of variations in the levels of Blythe Project generation and EOR transfers and on whether or not modifications are made to the APS 69-kV system). At peak load levels these amounts are higher than was the case without the WMGF on-line and mean that the same amounts of load could be served without as much reliance on the existing generation in the Area. Specifically, without any modifications to the APS system the SILs at peak load are 26 MW to 57 MW higher than was the case without the WMGF. With the specified modifications to the APS system the SILs are from 16 MW to 156 MW higher.

2. As can be seen from Figure 3, the RMR requirement from existing generation at peak loads varies depending on Blythe Project generation levels, EOR power transfers, and whether the Foothill-Foothill Tap and 32nd Street-Ivalon 69-kV lines were reconductored and the North Gila 69-kV bus was sectionalized. Without any modifications to the APS system the RMR requirement from existing generation ranges from 115-120 MW. With the specified modifications to the APS system the RMR requirement would be about 90 MW. As noted above, the RMR generation required from existing generation

in the Area without the WMGF on line would be 210 MW to 250 MW (depending on whether a second transformer is installed at North Gila)

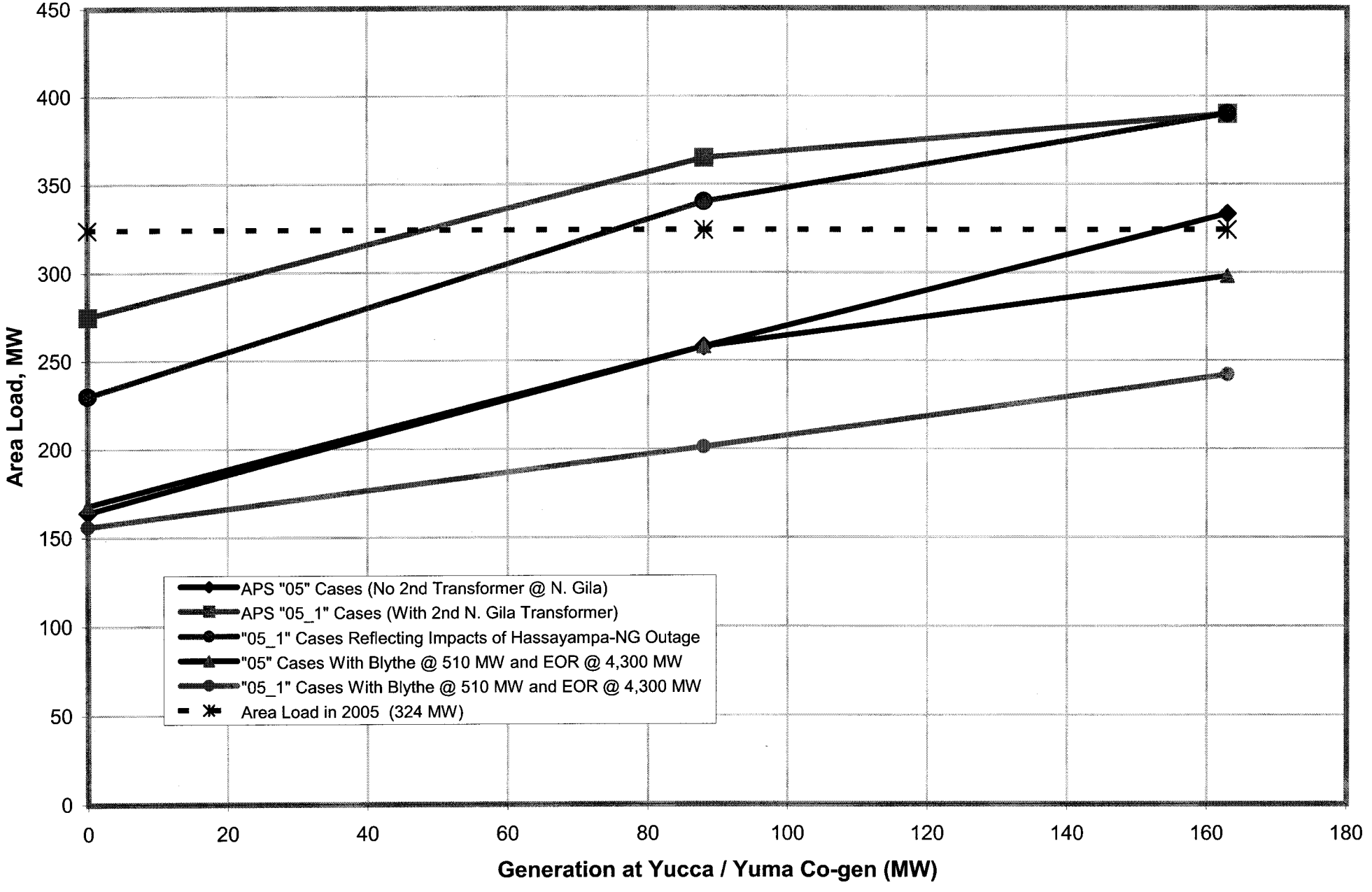
3. If the RMR generation from existing resources was at the 163 MW level (as identified in the APS studies) the total Area load that could be served would be approximately 350 MW (without any modifications to the APS system) and about 400 MW if the modifications discussed above were made.

FIGURE 1
EXISTING SYSTEM IN YUMA AREA



NCI - 03/06/03

FIGURE 2
YUMA RMR REQUIREMENTS - WITHOUT WMGF



NCI - 03/06/03

FIGURE 3
YUMA RMR REQUIREMENTS - WITH WMGF

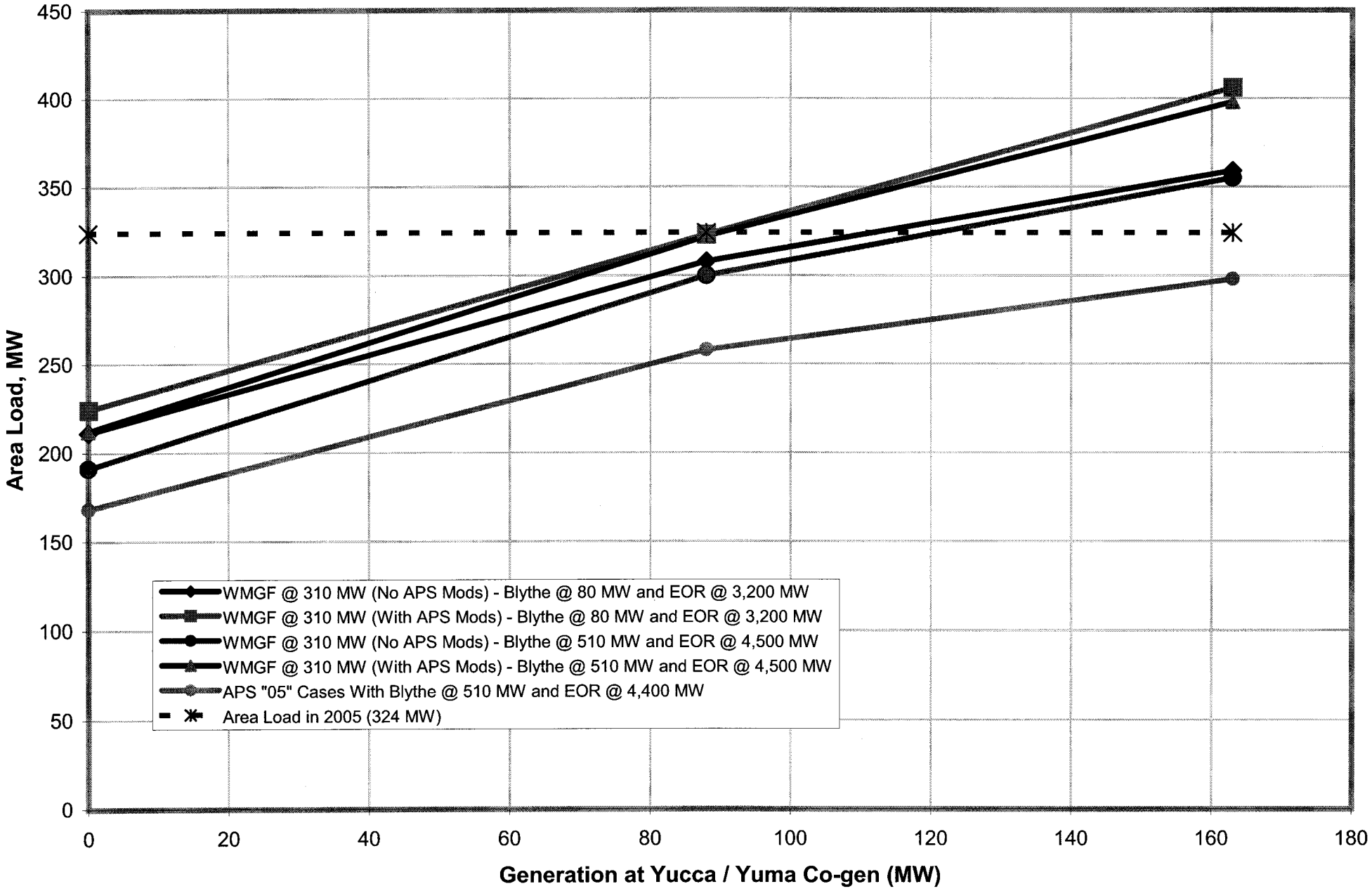


TABLE 4
SUMMARY OF STUDY RESULTS AND ASSUMPTIONS

Studies Based on "05a" Cases	APS Cases		WMGF Cases					
	05a	05a1	scen-2c	scen-2e	scen-5a	scen-5c [2/]	scen-6c	scen-6e
Results Summary (MW)								
Yuma Load Level (MW)	164	275 [1/]	211	224	168	156	191	212
Yuma RMR Generation (MW)	0	0	0	0	0	0	0	0
Yuma Area SIL (MW)	164	275	211	224	168	156	191	212
Case Assumptions								
Blythe Project Generation (MW)	80	80	80	80	510	510	510	510
East-of-River Transfers (MW)	3,150	3,269	3,236	3,246	4,355	4,347	4,414	4,430
WMGF Generation (MW)	0	0	310	310	0	0	310	310
North Gila 69-kV Bus Split?	N	Y	N	Y	N	Y	N	Y
2nd 500/69-kV transformer @ N. Gila?	N	Y	N	N	N	Y	N	N
Foothill-Foothill Tap line recond.	N	Y	N	Y	N	N	N	N
Critical Element(s) and Loading (%)								
Yucca-Pilot Knob 161-kV line	98	113(2)	96 (2)	99	100 (1) (2)	100		
North Gila-Mittry 69-kV line		97 (1)						
Foothill-Foothill Tap 69-kV line			100 (1)					
Gila 161/69-kV transformers					95 (2)	100		
Pilot Knob-Knob 161-kV line							100	100
Critical Outage(s)								
North Gila 69-kV bus (entire)	X		X (2)		X (1)		X	
North Gila-Gila 69-kV line		X (1)						
Hassayampa-North Gila 500-kV line		X (2)			X (2)	X		
North Gila-Mittry 69-kV line			X (1)					
North Gila 69-kV bus (Sec. 1)				X				X

[1/] Would have to be reduced to about 230 MW to avoid post Hassayampa-North Gila outage overloads

[2/] Load reduction to avoid overloads of Gila transformers shared pro-rata by APS load and load served from Gila

Studies Based on "05b" Cases	APS Cases		WMGF Cases					
	05b	05b1	scen-2c	scen-2f	scen-5a	scen-5b [2/]	scen-6c	scen-6e
Results Summary (MW)								
Yuma Load Level (MW)	258	365 [1/]	308	323	258	201	300	322
Yuma RMR Generation (MW)	88	88	88	88	88	88	88	88
Yuma Area SIL (MW)	170	277	220	235	170	113	212	234
Case Assumptions								
Blythe Project Generation (MW)	80	80	80	80	510	510	510	510
East-of-River Transfers (MW)	3,156	3,273	3,194	3,209	4,356	4,305	4,414	4,447
WMGF Generation (MW)	0	0	310	310	0	0	310	310
North Gila 69-kV Bus Split?	N	Y	N	Y	N	Y	N	Y
Foothill-Foothill Tap line recond.	N	Y	N	Y	N	N	N	N
Limiting Element(s) and Loading (%)								
Yucca-Pilot Knob 161-kV line	98	108 (2)		99	97 (2)			100 (1)
North Gila-Mittry 69-kV line		96 (1)						
Foothill-Foothill Tap 69-kV line			99					98 (2)
Pilot Knob-Knob 161-kV line							100	99 (1)
Gila 161/69-kV transformers					100 (1)	100		
Critical Outage(s)								
North Gila 69-kV bus (entire)	X				X (2)		X	
North Gila-Gila 69-kV line		X (1)						
North Gila-Mittry 69-kV line			X					X (2)
Hassayampa-North Gila 500-kV line		X (2)			X (1)	X		
North Gila 69-kV Bus (Sec. 1)				X				X (1)

[1/] Would have to be reduced to about 340 MW to avoid post Hassayampa-North Gila outage overloads

[2/] Load reduction to avoid overloads of Gila transformers shared pro-rata by APS load and load served from Gila

TABLE 4
SUMMARY OF STUDY RESULTS AND ASSUMPTIONS

Studies Based on "05c" Cases	APS Cases		WMGF Cases					
	05c	05c1	scen-2c	scen-2f	scen-5b [2/]	scen-5c [2/]	scen-6c	scen-6f
Results Summary (MW)								
Yuma Load Level (MW)	333	390	359 [1/]	406	298	242	355 [1/]	398
Yuma Area Generation (MW)	163	163	163	163	163	163	163	163
Yuma Area SIL (MW)	170	227	196	243	135	79	192	235
Case Assumptions								
Blythe Project Generation (MW)	80	80	80	80	510	510	510	510
East-of-River Transfers (MW)	3,159	3,226	3,170	3,215	4,390	4,336	4,508	4,512
WMGF Generation (MW)	0	0	310	310	0	0	310	310
North Gila 69-kV Bus Split?	N	Y	N	Y	N	N	N	Y
2nd 500/69-kV transformer @ N. Gila?	N	Y	N	N	N	N	N	N
Foothill-Foothill Tap line recond.	N	Y	N	N	N	N	N	Y
32nd St-Ivalon line recond.	N	Y	N	Y	N	N	N	Y
Critical Element(s) and Loading (%)								
32nd St-Ivalon 69-kV line	98		100				99	
10th St.-32nd St. 69-kV line		99						
Foothill-Foothill Tap 69-kV line			98				98	
Yucca-Pilot Knob 161-kV line				99				96
Gila 161/69-kV transformers					100	100		
Pilot Knob-Knob 161-kV line							95	98
Gila-North Gila Tap 69-kV line								100
Critical Outage(s)								
North Gila 69-kV bus (entire)	X		X				X	
Yucca-Laguna Tap 69-kV line		X						
North Gila-Mittry 69-kV line								
Hassayampa-North Gila 500-kV line					X	X		
North Gila 69-kV Bus (Sec. 1)				X				X

[1/] Would be 30-40 MW higher if 32nd St-Ivalon and/or Foothill-Foothill Tap lines were reconductored

[2/] Load reduction to avoid overloads of Gila transformers shared pro-rata by APS load and load served from Gila